

Iowa State FFA Agricultural Mechanics Career Development Event 2018

State of Iowa
 Department of Education
 Iowa State University
 Department of Agricultural Education
 and Studies

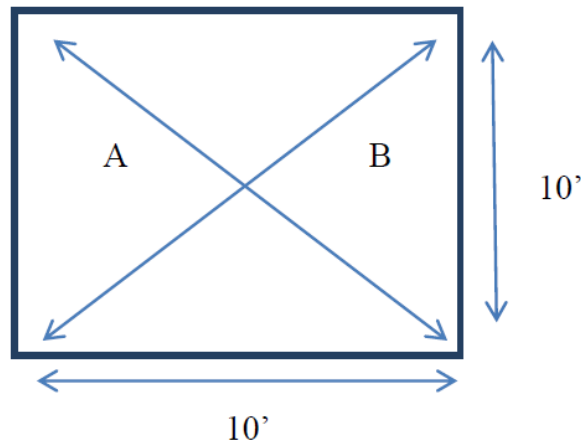
Contestant Name: _____

Contestant School: _____

Environmental and Natural Resource Systems

Land Measurement Skill

You have selected a site on which build a small 10' by 10' storage shed for the antique tractor and equipment project that you are currently working on. In order to ensure that the area for the shed is square, you will need to place a flag where each corner of the building should be. Please be sure to write your name and FFA chapter on all four of the flags.



Evaluation Score Card	<u>Points</u>	
	Possible	Earned
All four sides measure 10' (-1 pt. per every 1" off)	20	_____
Measurement A = Measurement B (-1 pt. per every 1" off)	5	_____
Total	25	_____

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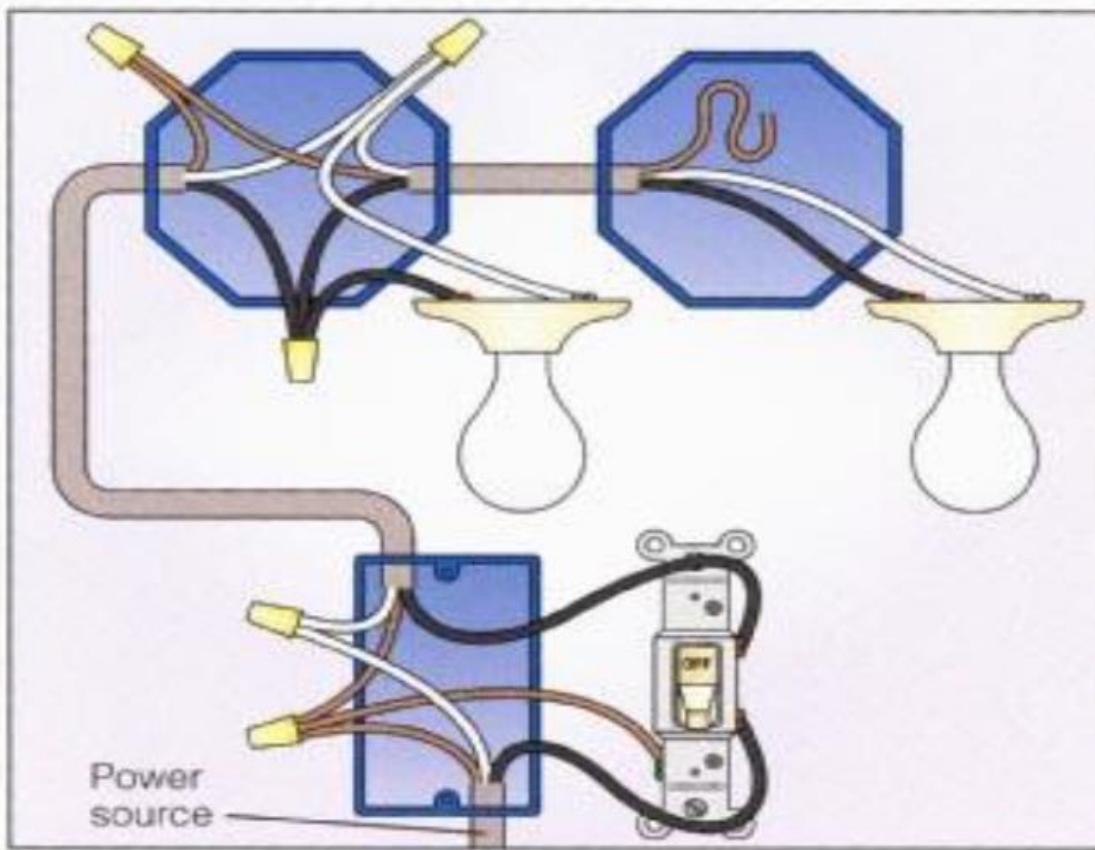
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Electrical Systems Electrical Wiring Skill

You are working to help wire up the new lighting system in a storage facility located on your family's farm. You are responsible for wiring a storage room in the facility, where you have been asked to run a single-pole switch with two lights. Using the diagram provided below, wire the electrical system using the provided materials. NOTE: Be sure to place a wire nut over the end of the ground wire running to the second lamp.

Please note that you will be provided with more than one option for wire and switches.



Evaluation Score Card**Points**

	Possible	Earned (Circle One)
Selected a single-pole switch	2	0 / 2
Selected the correct wires	2	0 / 2
Ran the neutral wires correctly	3	0 / 1 / 2 / 3
Ran the hot wires correctly	3	0 / 1 / 2 / 3
Ran the ground wires correctly	2	0 / 1 / 2
Wire stripped at appropriate length	3	0 / 1 / 2 / 3
Wires were installed in the correct direction	3	0 / 1 / 2 / 3
Connections are tight	3	0 / 1 / 2 / 3
Safety procedures followed	4	0 / 4
Total	25	_____

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Contestant School: _____

Machinery and Equipment Systems Tractor Systems Skill

Using your knowledge of tractor systems, address the items in the scenario below.

A customer has brought this John Deere 1025R Sub-compact Utility Tractor to the local agricultural equipment dealership for repair. As an experienced technician at the dealership, your service manager has assigned you to work on this unit. The work order taken by the service manager details the following information:

The customer reported that:

- Tractor will start but dies if you try to move it forward
- This issue just started in the last few days
- Tractor was fueled up three days ago with fresh off-road diesel fuel
- The mowing deck will not activate at all

Based upon this information, address each of the following items as you attempt to gather information, diagnose the problem, and resolve the issue.

1) What is the serial number of the tractor? _____

2) Which of these systems is the most likely cause of the customer's issue(s)?

A) Electrical

B) Fuel

C) Hydraulic

D) Lubrication

3) Visually inspect the tractor. Which specific part is causing the issue(s)?

4) What would be the most effective method to resolve the issue(s) with this tractor?

Evaluation Score Card**Points****Possible****Earned (Circle one)**

Tractor serial number	5	0 / 5
System-related cause of issue(s)	5	0 / 5
Part-related cause of the issue(s)	5	0 / 5
Proposed solution to resolve issue(s)	5	0 / 5
Safety procedures followed	5	0 / 5
Total	25	_____

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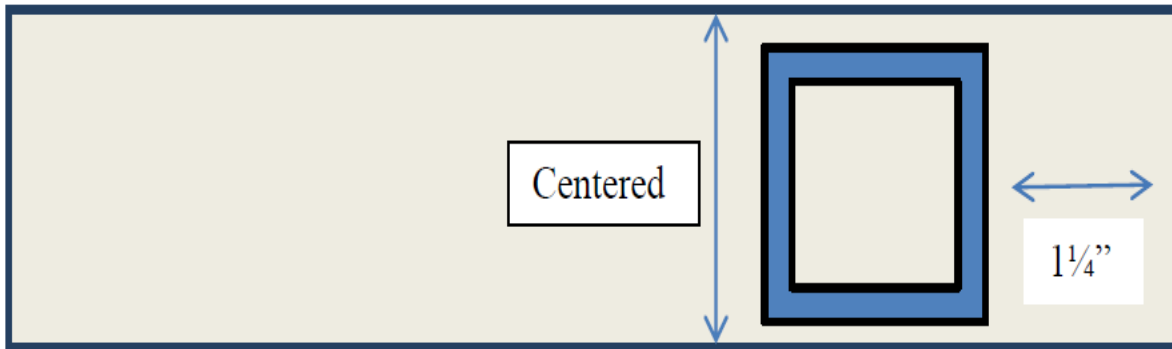
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Metals and Welding

Gas Metal Arc Welding Skill

Using the GMAW machine and the dimensions provided below, you are to weld the piece of square tubing to the metal coupon. Weld all four sides of the tubing to the coupon. **DO NOT ADJUST THE MACHINE! BE SURE TO WEAR ALL OF YOUR WELDING PPE!**



Evaluation Score Card	<u>Points</u>	
	Possible	Earned (Circle One)
Square tubing placement (-1 pt. per 1/8" off)	4	0 / 1 / 2 / 3 / 4
Overall quality of weld #1	4	0 / 1 / 2 / 3 / 4
Overall quality of weld #2	4	0 / 1 / 2 / 3 / 4
Overall quality of weld #3	4	0 / 1 / 2 / 3 / 4
Overall quality of weld #4	4	0 / 1 / 2 / 3 / 4
Safety procedures followed	5	0 / 1 / 2 / 3 / 4 / 5
Total	25	_____

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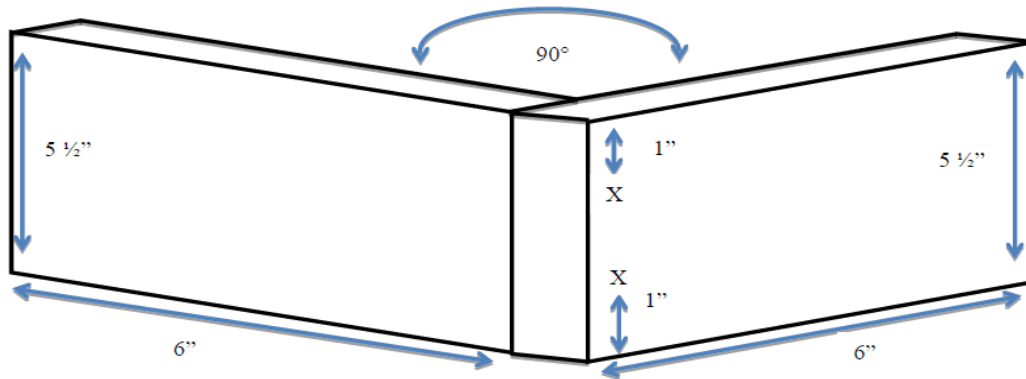
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Structural Systems Carpentry Skill

Using the diagram below, you are to use the countersink bit to drill two holes prior to joining the 1" x 6" boards provided. The "X" indicates where the screws should be inserted in order to connect the two boards.



Evaluation Score Card	<u>Points</u>	
	Possible	Earned (Circle one)
Correct board configuration	2	0 / 1 / 2 / 3
Top screw is flushly placed 1" from the top without cracks in the board (-3 pts. per crack)	9	0 / 3 / 6 / 9
Top screw is flushly placed 1" from the top without cracks in the board (-3 pts. per crack)	9	0 / 3 / 6 / 9
Safety procedures followed	5	0 / 5
Total	25	_____

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- The mowing deck will not activate at all

Based upon this information, address each of the following items as you attempt to gather information, diagnose the problem, and resolve the issue.

1) What is the serial number of the tractor? **1M01060DJJM100610**

2) Which of these systems is the most likely cause of the customer's issue(s)?

A) Electrical

B) Fuel

C) Hydraulic

D) Lubrication

3) Visually inspect the tractor. Which specific part is causing the issue(s)?

Safety switch connector under operator's seat

4) What would be the most effective method to resolve the issue(s) with this tractor?

Reconnect the safety switch connector under operator's seat

Evaluation Score Card**Points****Possible****Earned (Circle one)**

Tractor serial number	5	0 / 5
System-related cause of issue(s)	5	0 / 5
Part-related cause of the issue(s)	5	0 / 5
Proposed solution to resolve issue(s)	5	0 / 5
Safety procedures followed	5	0 / 5
Total	25	_____